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Microbiological aspects in conservative treatment of generalized periodontitis using autotrombocytic mass

Turaeva F.A.
Bukhara State Medical Institute

ABSTRACT

The primary factor causing periodontal damage is plaque bacteria. The etiological structure of infectious processes in the last decade has changed significantly, due to the constant evolution of microbes and the involvement of opportunistic microbes in the pathological process, which can act as commensals in the normal microflora and manifest their pathogenicity with a decrease in the body's immune status. Inflammatory processes in the oral cavity are sometimes an endogenous infection caused by the resident flora of not only the oral cavity, but also other ecosystems of the body.

Keywords: diseases of periodontal tissues, microflora of various biotopes, hypersensitivity.

I.Introduction

The constant presence of microorganisms in the gingival pockets under certain conditions of the body can cause a state of hypersensitization and a change in its immunological reactivity. As the inflammatory disease of periodontal tissues develops, the composition of the microflora of various biotopes that make up the oral cavity changes. At the beginning of the disease, the normal microflora is displaced by conditionally pathogenic bacteria, then there is an abundant reproduction of pathogenic microbes, including those causing putrefactive processes in the periodontium. In addition to the above, a number of authors argue that inflammatory diseases of periodontal tissues, as a rule, are accompanied by oral dysbiosis, the severity of which corresponds to the degree of periodontal damage. At the same time, against the background of a pronounced growth of pathogenic and opportunistic microorganisms, the concentration of representatives of normal microflora decreases. The bacterial profile of the oral biocenosis is determined by a number of exogenous and endogenous factors. The defense mechanisms of the host organism significantly affect the virulence of opportunistic and pathogenic microorganisms in each of the biotopes. It is no secret that a violation of the ratio of normal and conditionally pathogenic flora leads to the development of dysbacteriosis and is characterized by a relative decrease in the content of lactobacilli and bifidobacteria. It is known that a significant role in the development of periodontitis belongs to Porphyromonasgingivalis, Treponemadenticola, Tannerellaforsythensis (Bacteroidesforsythus), Fusobacteriumspp. and a number of other microorganisms. Thus, the microflora of the oral cavity and the interaction of factors of local and general nonspecific and specific resistance are among the most informative.

Scientific knowledge about the etiopathogenesis of periodontitis today determines the periodontal microflora in the biofilm as the dominant etiological factor.

Biofilm is an interacting microorganism organized in microcolonies, grouped by the protective adhesive lipopolysaccharide matrix they produce. The bacteria themselves make up 5-35% of the biofilm mass, the rest is the intercellular matrix. Microorganisms in biofilm exist and behave differently from bacteria in culture media. Microorganisms in the biofilm are more resistant to antibiotics, antimicrobial agents, and other active agents. The mechanism of increasing bacterial resistance to antibiotics in biofilms is due to both the limitation of the penetration of antibiotics through the biofilm and gene variability in bacteria persisting in the biofilm.

According to some recent scientific publications to eliminate the main etiological factor of periodontitis - biofilm, there is often no need for ag.

Purpose: development and implementation of microbiological aspects in the conservative treatment of generalized periodontitis using autoplatelet mass.

2. Materials Methods

We conducted clinical microbiological studies in groups to identify microorganisms that led to periodontal inflammation and their identification in the periodontal pocket after treatment in comparison with the microflora of patients with healthy periodontal disease. To this end, we conducted a microbiological study of 98 patients with generalized periodontitis, of which 48 (48.98%) were men and 50 (51.02%) were women. Patients were divided into 3 groups:

Group 1 - the main group, 68 patients, of which 36 (52.94%) were men and 32 (47.5%) were women whose treatment was carried out using an autocyte platelet mass;

Group 2 - comparison group, 30 patients, of which 18 (60%) were women and 12 (40%) were men who received basic periodontal treatment.

Group 3 - a control group of 20 healthy individuals with a healthy periodontium.

The examination of patients was carried out on the basis of the bacteriological laboratory of the department of microbiological research of the Bukhara regional diversified center of Bukhara.

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The technique of obtaining autothrombocyte mass.
The following equipment and materials were used to obtain an autothrombocyte mass:
• bench-top laboratory centrifuge with a centrifugal force of 800–1200G, or a rotation speed of 3200 rpm;
• specialized 9 ml Plasmolifting ™ tubes (sterile, sodium-containing heparin according to invivo technology with specialized thixotropic gel according to Plasmolifting ™ technology);
• peripheral venous catheters with a diameter of at least 1.1 mm;
• sterile disposable medical syringes (luer-lock systems) from 2.0 ml to 5.0 ml;
• injection needles.

Blood sampling was carried out in a volume of 9-36 ml using a peripheral venous catheter, whose diameter was 1.1 mm, and depended on the localization of administration during treatment. All received blood was placed in 1-4 specialized Plasmolifting ™ tubes. Autothrombocyte mass was obtained by centrifuging the patient's blood using special tubes for plasmolifting and centrifugation, with developed centrifugation modes. The autothrombocyte mass obtained as a result of centrifugation contains platelets in high concentration, which means the following growth factors:

To obtain an injectable form of autothrombocyte mass, specialized PlasmoliphtingTM vacuum tubes are required. Blood sampling was carried out by the standard method using a tourniquet, alcohol wipes, butterfly needles, size 19-23 G, test tube holder adapter, adhesive tape.

The high prevalence of dental diseases among the population is associated with negative changes in periodontal tissues due to inflammatory processes.

One of the most pressing and complex problems in dentistry is the inflammatory processes of periodontal tissues.

The development of preventive, diagnostic and organizational measures based on the study of monitoring the dental incidence of periodontal tissue inflammation in different age groups determines the relevance of the problem chosen for research, the solution of which is important for practical public health.

Quality of life is an integral characteristic of the patient's physical, psychological, emotional and social functioning, based on the subjective perception of their health. Assessment of the quality of life allows solving many clinical and medico-social problems:

- to ensure monitoring of the patient's condition in the dynamics of treatment;
- determination and assessment of the effectiveness of condition monitoring;
- assess the need for changes in treatment regimens.

The method of assessing the quality of life is widely used to assess the health status of patients in various fields of medicine. But works on the application of this method in patients with inflammatory diseases of periodontal tissues of any age are rare and scattered.

The autoplatelet mass is injected into the area of the transitional fold and into the periodontal papilla. Each patient underwent the procedure five times. At the first visit, injections were performed in two segments of the upper jaw (in the first and second), at the second visit, after 3 days, in the lower jaw (in the third and fourth), the third visit was after one week, the fourth - after one month, the fifth - after 6 months. Starting at visit 3, injections were performed in all four segments.

Treatment of periodontitis also included professional oral hygiene and oral hygiene education and monitoring. For local therapy, the antibacterial ointment "Oflomelid", ofloxacin containing drugs, was used for 5 days. In case of exacerbation, peros antibiotic therapy was used using broad-spectrum antibiotics (Amoxiclav, Augomentin, Ciprofloxacin) for 5-7 days. Traditional therapy was supplemented by the appointment of a specific immunocorrective drug "Imudon". At the last stage of treatment of periodontal diseases, in order to improve the regeneration processes, injections were carried out using an autothromboitar mass. In order to stimulate the processes of bone tissue regeneration, Osteogenon was used, 1 tablet 2 times a day, 2 months of administration, 1 month, a break of 2 months of administration.

When carrying out the procedure for taking the test material, the following rules were observed:
• it was forbidden to use any medicinal rinses;
• immediately before the procedure for removing the test material, the patients did not clean their teeth;
• sampling of the test material was carried out 2 hours after ingestion of food;
• the test material was delivered to the bacteriological laboratory within 30 minutes.

Material for microbiological analysis was taken as follows:
- saliva, by spitting, in the amount of 1 ml was collected in sterile tubes;
- the contents of the periodontal sulcus were collected using a sterile cotton swab and dipped into a sterile test tube with 1 ml of saline.

Isolation of microorganisms was carried out by sowing the obtained materials on artificial nutrient media.

We took 0.1 ml of saliva, 0.1 ml from a test tube with saline, as well as the contents of the periodontal sulcus, all this was placed on nutrient media. The test material was collected in a pipette and applied to the entire surface of the agar.

We studied the microbial landscape of the periodontal pocket of the third group of 20 people with intact periodontal disease, and identified 11 species of bacteria, 5 species of aerobes: Sr. sanguis, Sr. salivarius, epidermidis, xerosis, Neisseriasp. and anaerobes of 6 species: buccalis, longum, salivarius, anaerobius, parvula, gingivalis.

Landscape of microorganisms isolated from the gingival sulcus of healthy individuals (group 3, n = 20)

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Microorganism	Quantity, CFU / ml	%
Streptococcus sanguis	$7,0x10^8$	46,21%
Streptococcus salivarius	$7,8x10^7$	5,14%
Staphylococcus epidermidis	$9,2x10^7$	6,08%
Corinebacterium xerosis	$1,7x10^6$	0,11%
Neisseria spp.	$4,9x10^6$	0,32%
Leptotrichiabuccslis	$1,5x10^6$	0,1%
Lactobacillus salivarius	$8,5x10^7$	5,58%
Veilonellaparvula	$5,8x10^7$	3,8%
Bacteroides gingivalis	$1,6x10^7$	1,07%
Bifidobacterium longum	$4,5x10^6$	0,29%
Peptostreptococcusanaerobius	$6,9x10^7$	4,52%

It is known that the medical concept of quality of life includes indicators related to the state of human health in general. However, the maxillofacial system as a unique concentration of important functional elements of various organs occupies a large place in the complex of physical, emotional, intellectual characteristics of patients. Therefore, healthy teeth are an important attribute of the fullness of the psyche and behavioral reactions, starting from a certain age.

Considering the above, the conduct of research work in this direction of dentistry is relevant and in demand. The problem of treatment of periodontal tissue diseases in the course of therapeutic treatment is especially acute. The practical significance of the issue is determined by the high prevalence of periodontal tissue diseases among the population. The development of periodontal disease is initiated by a number of local and general factors. Microorganisms contribute to the onset of periodontitis, they are considered "marker" microorganisms.

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